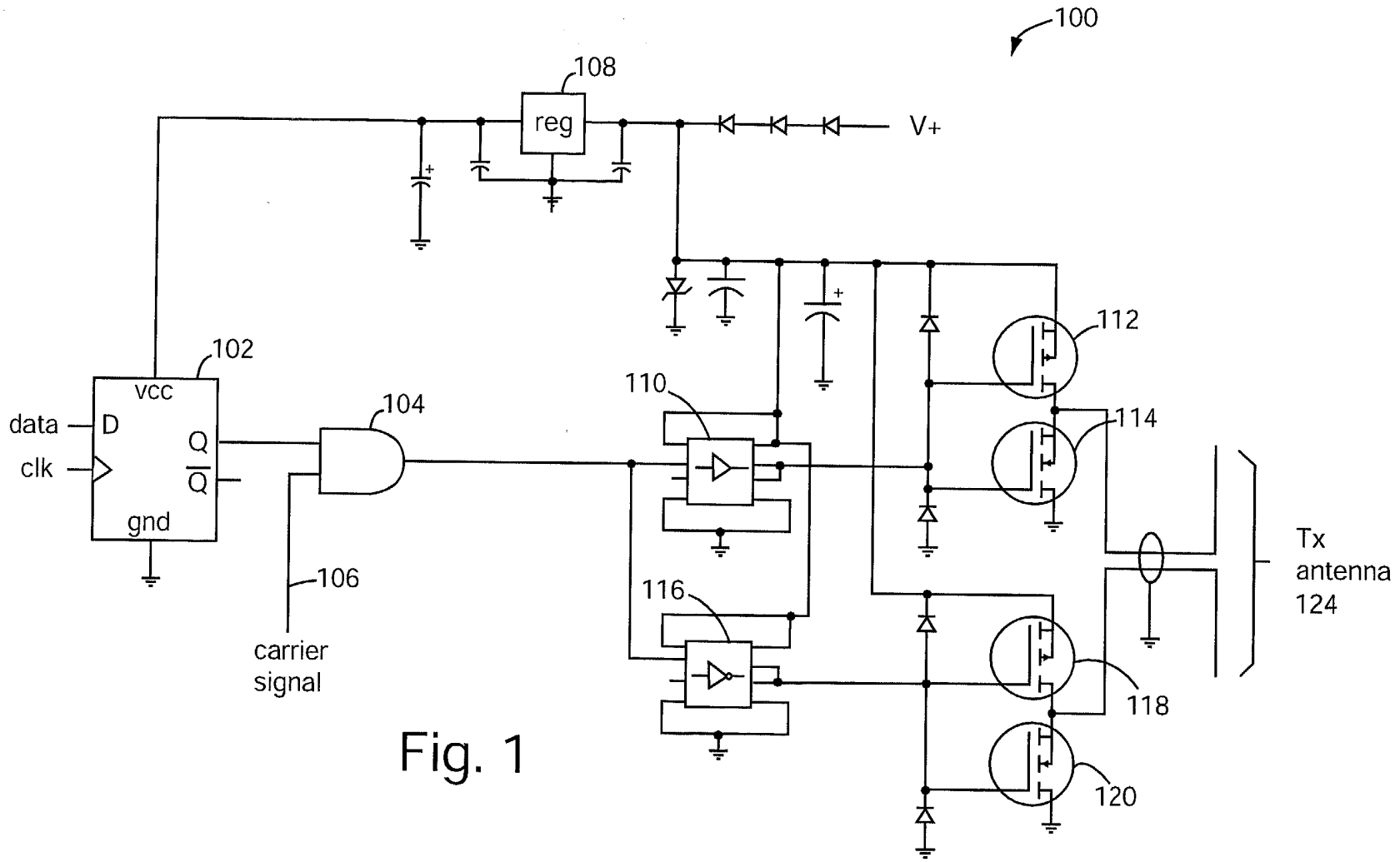
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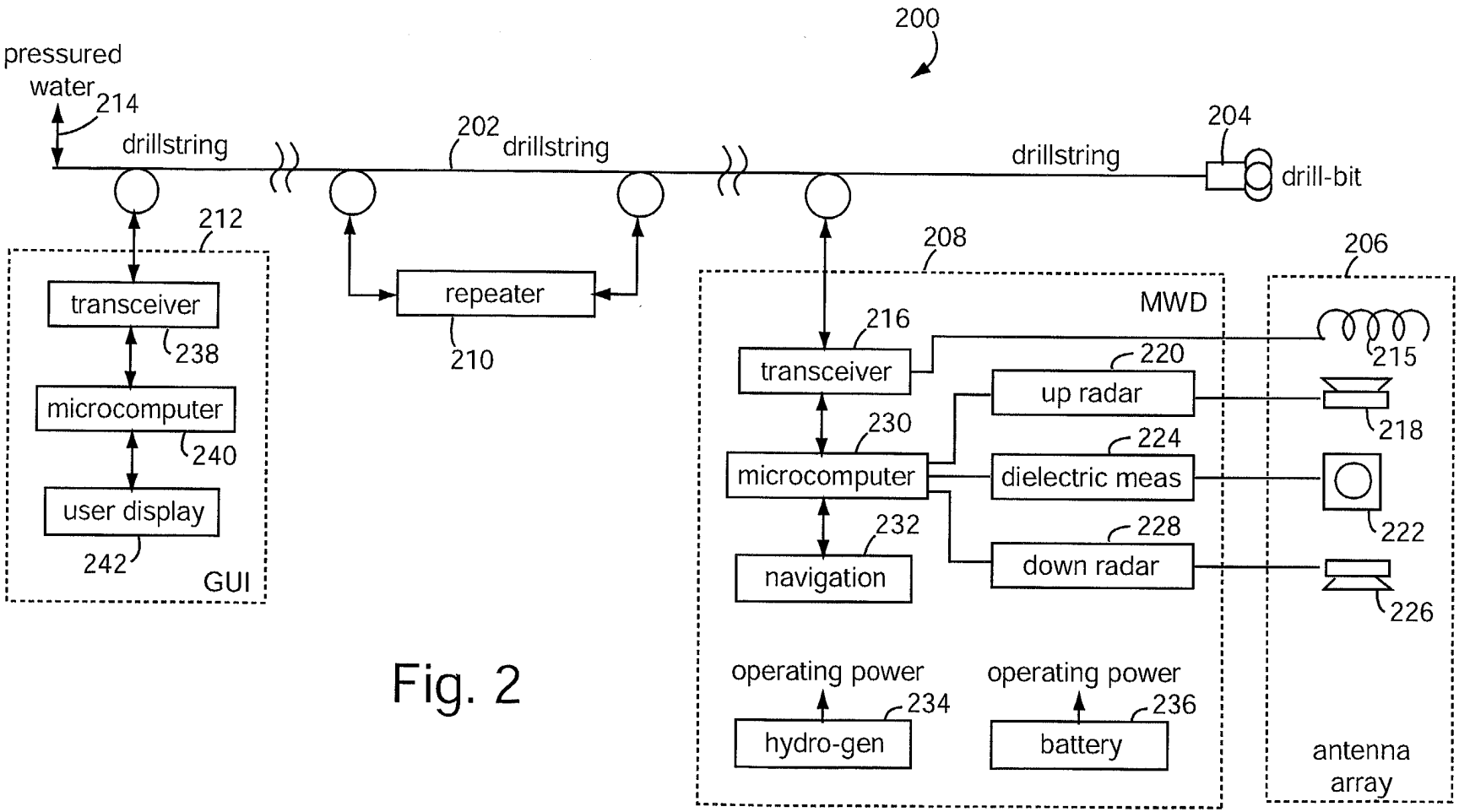
reg
V+
102
vcc
data
D
clk
Q
Q
gnd
104
106
carrier
signal
110
112
114
116
118
120
Tx
antenna
124

Fig. 1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water
214
drillstring
202
drillstring
drillstring
204
drill-bit
212
208
206
transceiver
238
microcomputer
240
user display
242
GUI
repeater
210
MWD
216
transceiver
220
up radar
230
microcomputer
224
dielectric meas
232
navigation
228
down radar
215
218
222
226
operating power
234
hydro-gen
operating power
236
battery
antenna
array

Fig. 2